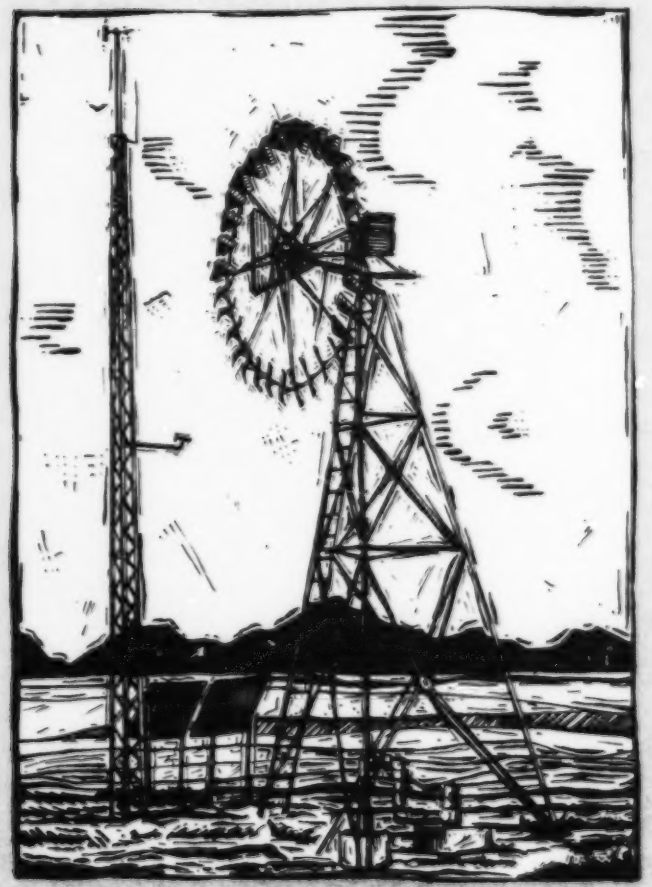
ALBERTA OFFICE OF RENEWABLE ENERGY TECHNOLOGY

SOUTHWEST ALBERTA RENEWABLE ENERGY INITIATIVE

ANNUAL REPORT 1990–91



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Heritage Fund

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Alberta
ENERGY
Research and Technology Branch
Sustainable Energy Development Division

Alberta Office
of Renewable
Energy Technology

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December 1, 1991

The Honourable Rick Orman
Minister of Energy
228 Legislature Building
Edmonton, Alberta
T5K 2B6

Dear Mr. Orman:

It is my pleasure to submit to you the first Annual Report of the Alberta Office of Renewable Energy Technology for the fiscal year 1990-91. The report contains a summary of activities, revenues and expenditures during the year in support of the Southwest Alberta Renewable Energy Initiative.

Respectfully submitted,

Dr. P. John Rottger
Chairman, Board of Directors
Alberta Office of Renewable Energy Technology

Chairman's Message

As the first Chairman of the Board of Directors, I am honoured to be involved with the earliest stage of operations of the Alberta Office of Renewable Energy Technology (AORET). The Office was created by Minister of Energy Rick Orman in May 1990 to manage the Southwest Alberta Renewable Energy Initiative, a program that has excitin ; potential for Alberta.

It has been a privilege to work with the first Board of Directors: Craig Simmons, Pincher Creek; George Sinnott, Pincher Creek; Robert Smith, Calgary; Ed Barry, Calgary; and Juergen Kleta, Edmonton.

Fiscal year 1990-91 was the start-up year for the Southwest Alberta Renewable Energy Initiative. I am happy to report that we have made good progress in creating awareness and support for the Initiative and have approved funding for a number of projects. It has been a busy year.

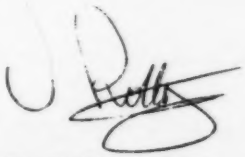
The Board of Directors is pleased with the high level of interest the private sector has shown in renewable energy and with the quality of the many projects that have been proposed.

The eight initial projects approved by the Board of Directors will demonstrate large-scale wind power, small hydro generation and solar- and wind-powered water pumping. Canadian and Alberta manufacturers will also have funding to advance the development of their innovative designs. These earliest projects provide an excellent base which can be built upon in year two and three of the Southwest Alberta Renewable Energy Initiative.

Additional projects are also being sought and it is anticipated that as many as 15 projects may be supported by the Initiative during the three-year period for which funding is approved.

The use of renewable energy sources and the development of advanced equipment to better utilize these new energy sources will become increasingly important as we move toward the 21st century. The natural conditions which exist in Southwest Alberta provide an ideal testing ground for these renewable energy technologies. The successful demonstration of these technologies will strengthen Alberta's reputation as Canada's energy province.

This is an exciting time for the renewable energy industry and we are honoured to be able to play a part in developing its promising potential for the Province of Alberta.



Dr. P. John Rottger
Chairman, Board of Directors
Alberta Office of Renewable Energy Technology

Organizational Structure

ALBERTA OFFICE OF RENEWABLE ENERGY TECHNOLOGY (AORET)

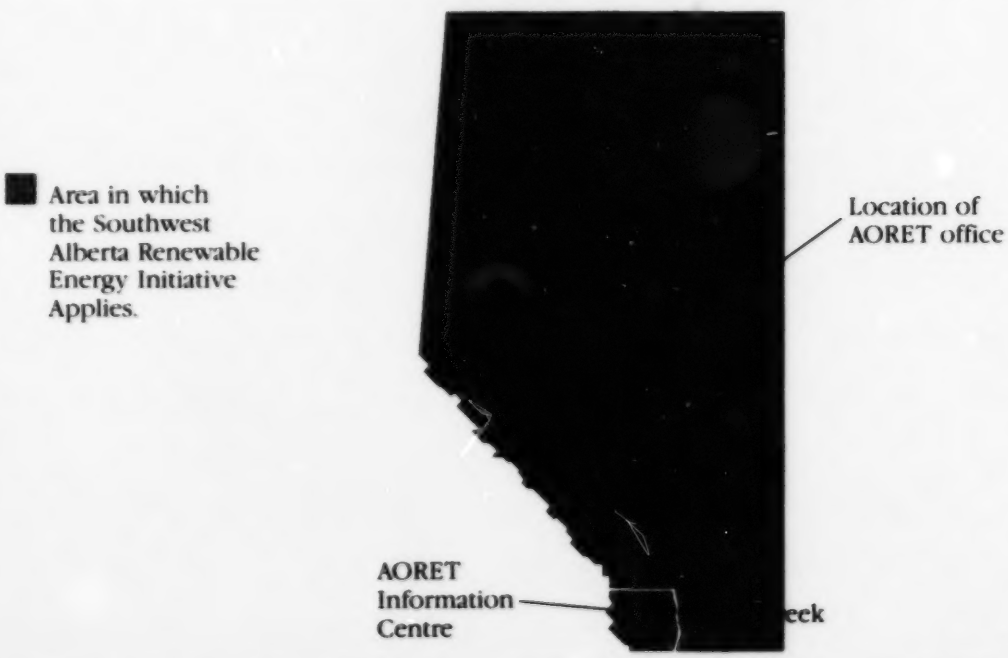
MINISTER OF ENERGY

AORET
Board of Directors

Department of Energy
Research & Technology
Branch Administration
Support Group
Edmonton

AORET
Information Centre

Pincher Creek



Early Beginnings

In 1986 Premier Don Getty announced that the Alberta government would launch a program to introduce large scale renewable energy projects in Alberta. The prime purpose of the program would be to stimulate economic growth while developing environmentally safe ways of harnessing the province's renewable sources of power.

A decade of research had shown that Alberta was ideally suited to the development of solar- and wind-based energy technologies. The Southwest part of the province was chosen as the best place to begin a program because of its abundant, year-round supply of wind and sun.

Premier Getty's commitment led to the creation of the Southwest Alberta Solar, Wind and Renewable Energy Advisory Board. Consisting of representatives from the Pincher Creek area and chaired by Dr. John Rottger, the Advisory Board prepared a detailed report with specific recommendations for a prospective program.

Those recommendations shaped the Southwest Alberta Renewable Energy Initiative (SWAREI) announced by Energy Minister Rick Orman in December 1989. SWAREI is funded by the Alberta government through the Alberta Heritage Savings Trust Fund with a budget of $3 million over three years. It is the largest renewable energy program in Western Canada as well as the largest wind energy project in Canada.

MANDATE

Alberta Office of Renewable Energy Technology

The Alberta Office of Renewable Energy Technology (AORET) was established in May 1990 to implement and manage SWAREI. The Office has an independent six-person Board of Directors chaired by Pincher Creek resident Dr. John Rottger. The Board reports directly to Alberta's Minister of Energy and receives administrative support from the Department of Energy.

The key operational functions of AORET are to: manage SWAREI; advise the Alberta government on renewable energy technologies; promote the development and use of renewable energy technologies; and liaise and promote co-operation with the private sector, research agencies, universities and other government organizations interested in renewable energy research and development.

Southwest Alberta Renewable Energy Initiative

SWAREI supports the development of wind energy, solar energy, small hydro, methane recovery from landfills and energy from waste. Areas of interest also include significant industrial energy conservation measures and energy efficiency.

The Initiative has the following objectives:

1. To promote the development of environmentally acceptable renewable energy and energy conservation technologies suitable to Alberta's climate.

2. To encourage and support the economic diversification of the Pincher Creek/Crowsnest Pass area through the development and enhancement of local business, expertise and know-how in the areas of renewable energy and energy conservation technologies.

3. To encourage private developers to use existing technologies in the construction and operation of significant demonstration projects of renewable energy generation, energy recovery and energy conservation measures.

4. To disseminate information on renewable energy technologies through the AORET Information Centre in Pincher Creek.

Assistance Available

SWAREI offers three types of assistance: financial assistance; power allocation; and information dissemination.

FUNDING ASSISTANCE

Private investors can apply for financial and technical assistance for field testing of renewable energy projects. As a general rule, financial assistance is available in the form of a non-repayable grant of up to a maximum of $200,000 per project in a fiscal year, subject to the availability of funds and suitability to program objectives. It is expected that the private sector will not only lead in the construction and subsequent operation of the projects, but will also provide substantial financial support.

CAPACITY ALLOCATION

AORET has been granted a total of 12.5 megawatts of power generation capacity under the Alberta Small Power Research and Development Program. This program allows small producers of power to sell electricity to the provincial power grid under ten- to twenty-year contracts at preferential rates.

Payment for electricity generated under the program can be selected in one of two ways: a fixed price per kilowatt hour or a price which is adjusted annually for inflation. Both rates are based on projected 1995 prices and are considerably higher than prices currently being offered by the utilities. This provides small power producers an opportunity to develop their technologies and demonstrate their potential to contribute to long term power requirements in Alberta. In 1990-91 AORET transferred 12.3 megawatts of its power allocation to three separate renewable energy projects.

Achievements in 1990-91

ADMINISTRATION

During its first year, AORET set up administrative procedures, prepared program guidelines and identified the portion of the province where SWAREI applies.

The Office has designed a two-stage submission process to facilitate planning and to save applicants time and effort. First, the applicant submits an "Expression of Interest", a short letter outlining the proposed project, to the AORET Information Centre in Pincher Creek. The Expression of Interest is evaluated by a Review Committee on its technical and economic merits, management capabilities and the degree to which it meets program objectives.

If the criteria are met, the applicant progresses to the second stage and is asked to submit a formal Proposal. The formal Proposal expands on the information given in the "Expression of Interest" and includes economic calculations, a detailed workplan and a budget. Generally, proposals are reviewed and evaluated by the AORET Board and outside experts within six weeks of receipt.

INFORMATION AND ASSISTANCE

The AORET Information Centre was established in Pincher Creek during the summer of 1990. The Centre has been instrumental in the promotion of SWAREI within the renewable energy industry and has provided information on technologies to the general public. During 1990-91 its manager participated in two national conferences and made eight presentations to groups in southern Alberta. In addition, five workshops on renewable energy and two workshops on energy efficiency were held at the Information Centre during the winter months.

The Centre also provides literature on renewable energy and energy conservation and answers questions from interested callers and visitors.

PROJECTS APPROVED IN 1990-91

The Alberta Office of Renewable Energy Technology initiated its first call for Expressions of Interest in June of 1990. A number of innovative submissions were received, representing a wide variety of potential directions for SWAREI to pursue. During 1990-91, AORET received 32 Expressions of Interest and 17 Proposals for development/demonstration funding. Of these, six projects were approved for SWAREI contributions in 1990-91 and two in 1991-92.

The largest project is a 36-turbine demonstration wind farm to be located at Cowley Ridge, northwest of Pincher Creek. Although the project received no funding, a transfer of nine megawatts of SWAREI's capacity allocation was approved. The wind farm is expected to cost $11.4 million over three years and will be financed entirely by U.S. Windpower Incorporated of Livermore, California. Construction, operation and maintenance of the wind farm will be done by an Alberta company, Wind Power Incorporated.

A second wind project will provide a testing ground for Canadian-made wind turbine technology. Adecon Alberta Incorporated will test a wind power plant at a site northeast of Pincher Creek. SWAREI capacity allocation of 1.5 megawatts will be transferred to the project.

A proposal to build a 2.4 megawatt hydroelectric plant at the Waterton Dam was also approved. The plant received 1.8 megawatts of SWAREI allocation and 0.6 megawatts from the Small Power Research and Development Program. It will be built and financed largely by Canadian Hydro Developers Incorporated of Calgary.

All three projects are scheduled to begin generation of electricity in 1991-92. When operational, they will have a combined nominal generating capacity of 12.9 megawatts.

Two Alberta companies received funding for projects involving solar- and wind-powered water pumps. Canadian Agtechnology Partners of Olds, Alberta will conduct a demonstration project using solar- and wind-powered water pumps to provide water for wildlife habitats near the Oldman River Dam.

Maverick Wind Energy of Twin Butte, Alberta will develop and demonstrate a wind-powered water pump beginning in 1991. The existing water pumping design developed in Fort Macleod will be modified using University of Calgary Professor Dr. J.A.C. Kentfield's expertise to refine the aerodynamics of the wind turbine rotor.

All wind projects will benefit from a wind energy survey of the Pincher Creek/Crowsnest Pass area to be conducted by meterologist Dr. James Salmon. When completed, this project will provide the data necessary to select the best locations for future wind turbine installations.

A test site established at Lethbridge in 1982 to provide independent testing of wind- and solar-powered wind pumpers came under the management of SWAREI in April 1990. Because the original site required considerable renovation it was decided that a new facility, to be called the Alberta Renewable Energy Test Site, would be built near Pincher Creek. When the new site is completed in 1992, it will replace the Lethbridge facility. The new location will be much more accessible to users and will allow it to be more closely intergrated within SWAREI.

Financial Statements

SWAREI funding is provided by the Alberta Heritage Savings Trust Fund. The Initiative contributed a total of $421,074 to six separate projects in 1990-91, of which $383,864 was spent. The remaining $37,210 has been carried over to 1991-92. It is worth noting that only $421,074 of SWAREI's $1 million budget was allocated, primarily due to the fact the first year of the Initiative was a start-up and organizational year.

Table I

Alberta Office of Renewable Energy Technology (AORET)
Southwest Alberta Renewable Energy Initiative (SWAREI) Program
Fiscal Year April 1, 1990 – March 31, 1991
Financial Statement (Audited)

PROJECT TITLE	Budget	1 Expenditures	2 Funds Transferred to March 31, 1991	3 = 1 – 2 Balance of Funds on March 31, 1991
SW/90/1-2 AORET Information Centre	180,000	142,790	180,000	–37,210
SW/90/1-3 Lethbridge Wind Research Test Site	50,000	50,000	50,000	0
SW/90/1-4 Alberta Renewable Energy Test Site	35,000	35,000	35,000	0
SW/90/2-1 Waterton Hydroelectric Project	100,000	100,000	35,000	65,000
SW/90/4-1 Demonstration of Solar & Wind Pumping Technology	21,361	21,361	19,225	2,136
SW/90/8-1 A Wind Energy Survey of the Pincher Creek/ Crowsnest Pass Area	11,415	11,415	10,274	1,141
AORET Administration	23,298	23,298	23,298	0
TOTAL	**421,074**	**383,864**	**352,797**	**31,067**
TOTAL PROGRAM BUDGET	**1,000,000**			
BALANCE OF BUDGET	**578,926**			

Prepared by Internal Audit Division
Alberta Energy/Forestry, Lands and Wildlife
October 23, 1991

Note: Column 1 represents actual expenditures to March 31, 1991. Column 2 represents funds transferred from AORET to projects. Column 3 represents the difference between expenditures and funds transferred.

Table II

Projected Expenditures For Current SWAREI Projects

PROJECT NUMBER	PROJECT TITLE	SWAREI CONTRIBUTIONS	TOTAL PROJECT COST
SW/90/1-2	AORET Information Centre	542,790	542,790
SW90/1-3	Lethbridge Wind Research Test Site	50,000	125,000
SW90/1-4	Alberta Renewable Energy Test Site	176,000	384,400
SW90/2-1	Waterton Hydroelectric Project	150,000	3,647,000
SW90/2-2	9 MW Wind Plant	0	11,410,000
SW90/4-1	Demonstration of Solar & Wind Pumping Technology	219,361	438,722
SW90/8-1	A Wind Energy Survey of the Pincher Creek/ Crowsnest Pass Area	97,060	177,060
	AORET Administration	150,000	150,000
	TOTAL SWAREI PROGRAM	**1,391,226**	**16,882,537**